

## ABSTRACT

The present invention relates to a method for producing a modified foreign chromosome(s) or a fragment(s) thereof, which comprises the steps of:

- (a) preparing a microcell comprising a foreign chromosome(s) or a fragment(s) thereof, and transferring said foreign chromosome(s) or a fragment(s) into a cell with high homologous recombination efficiency thorough its fusion with said microcell;
- (b) in said cell with high homologous recombination efficiency, inserting a targeting vector by homologous recombination into a desired site of said foreign chromosome(s) or a fragment(s) thereof, and/or a desired site of a chromosome(s) derived from said cell with high homologous recombination efficiency, thereby marking said desired site; and
- (c) in said cell with high homologous recombination efficiency, causing deletion and/or translocation to occur at the marked site of said foreign chromosome(s) or a fragment(s) thereof.

The invention also relates to a method for producing a chimeric non-human animal or a non-human animal, which comprises a modified foreign chromosome(s) or a fragment(s) thereof; the chimeric non-human or non-human animal; a recombinant chromosome(s) or a fragment(s) thereof, which is

obtained by deletion and/or translocation of a chromosome(s) or a fragment(s) thereof; a method for modifying a foreign chromosome(s) or a fragment(s) thereof in a cell; an artificial chromosome vector, which comprises a centromere sequence derived from human chromosome #14 and a recognition sequence for a site-directed recombination enzyme; and a recombinant chromosome(s) or a fragment(s) thereof obtained by deletion and/or translocation of a chromosome(s) or fragment(S) thereof.